PTO/SB/08A (07-05)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Substitute for form 1449A/PTO

Complete if Known	
Application Number	10/058,869
Filing Date	January 28, 2002
First Named Inventor	Van Beek et al.
Art Unit	2181
Examiner Name	TBD
Attorney Docket Number	7146.0120

Sheet		of	

U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No.[1]	Document Number — Number - Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US- 4,183,056	01-08-1980	Evans et al.	
		US- 4,253,108	02-24-1981	Engel	
		US- 4,298,884	11-03-1981	Reneau	
		US- 4,937,685	06-26-1990	Barker et al.	
		US- 5,027,400	06-25-1991	Baji et al.	
		US- 5,109,482	4-28-1992	Bohrman	
		US- 5,148,154	09-15-1992	MacKay, et al.	
		US- 5,200,825	04-06-1993	Perine	
		US- 5,333,091	07-26-1994	Iggulden et al.	
		US- 5,339,393	08-16-1994	Duffy et al.	
		US- 5,424,770	06-13-1995	Schmelzer, et al.	
		US- 5,452,016	09-19-1995	Ohara et al.	
		US- 5,521,841	05-28-1996	Arman et al.	
		US- 5,635,982	06-03-1997	Zhang et al.	
		US- 5,654,769	08-05-1997	Ohara et al.	
		US- 5,664,227	09-02-1997	Mauldin et al.	
		US- 5,675,752	10-07-1997	Scott et al.	
		US- 5,778,108	07-07-1998	Coleman, Jr.	
		US- 5,805,733	09-08-1998	Wang et al.	
		US- 5,821,945	10-13-1998	Yeo et al.	
		US- 5,875,107	02-23-1999	Hoffberg et al.	
		US- 5,920,300	07-06-1999	Coleman, Jr.	
		US- 5,923,365	07-13-1999	Tamir et al.	
		US- 5,933,811	08-1999	Angles et al.	
		US- 5,959,681	09-28-1999	Cho	
		US- 5,959,697	9-28-1999	Coleman, Jr.	
		US- 5,969,755	10-19-1999	Courtney	
		US- 5,990,980	11-23-1999	Golin	
		US- 5,995,095	11-30-1999	Ratakonda	
		US- 6,014,183	01-11-2000	Hoang	
		US- 6,055,018	04-25-2000	Swan	
		US- 6,100,941	08-08-2000	Dimitrova et al.	
		US- 6,141,041	10-31-2000	Carlbom, et al.	
		US- 6,141,060	10-31-2000	Honey et al.	
		US- 6,144,375	11-07-2000	Jain et al.	
		US- 6,161,142	12-12-2000	Wolfe et al.	
		US- 6,169,542	01-02-2001	Hooks et al.	
		US- 6,195,497	02-27-2001	Nagasaka et al.	
		US- 6,216,129	04-10-2001	Eldering	
		US- 6,219,837	04-17-2001	Yeo et al.	
		US- 6,275,268	08-14-2001	Ellis et al.	
		US- 6,304,665	10-16-2001	Cavallaro et al.	
		US- 6,342,904	01-29-2002	Vasudevan et al.	
		US- 20020013943	01-31-2002	Haberman et al.	
		US- 20020018594	02-14-2002	Xu et al.	
		US- 6,363,160	03-26-2002	Bradski et al.	
		US- 20020080162	06-27-2002	Pan et al.	
		US- 20020083473	06-2002	Agnihotri et al.	

	US- 6,418,168	07-09-2002	Narita	
	US- 20020120929	08-2002	Schwalb et al.	
	US- 20020141619	10-03-2002	Standridge et al.	
	US- 20020184220	12-05-2002	Teraguchi et al.	
	US- 20020194589	12-2002	Cristofalo et al.	
	US- 20030001880	01-2003	Holtz et al.	
	US- 20030026592	02-06-2003	Kawhara et al.	
	US- 6,549,643	04-15-2003	Toklu et al.	
	US- 6,556,767	04-29-2003	Okayama et al.	
	US- 20030081937	05-2003	Li	
	US- 6,597,859	07-2003	Leinhart et al.	
	US- 6,665,423	12-16-2003	Mehrotra et al.	
	US- 6,678,635	01-13-2004	Tovenkere et al.	
	US- 20040017389	01-2004	Pan et al.	
	US- 6,691,126	02-10-2004	Syeda-Mahmood	
	US- 6,724,933	04-20-2004	Lin et al.	
	US- 20040088289	05-2004	Xu et al.	
	US- 20040125124	07-01-2004	Kim et al.	
	US- 20040125877	07-2004	Chang et al.	
	US- 6,774,917	08-10-2004	Foote et al.	
	US- 20040227768	11-18-2004	Bates et al.	
	US- 6,829,781	12-07-2004	Bhagavath et al.	
	US- 6,931,595	08-2005	Pan et al.	
	US- 6,970,510	11-29-2005	Wee et al.	
	US- 6,981,129	12-27-2005	Boggs et al.	
	US- 6,993,245	01-31-2006	Harville	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
		Country Code[3] - Number[4] - Kind Code[5] (if known)					

NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		STEPHEN W. SMOLIAR and HONGJIANG ZHANG, "Content-Based video Indexing and Retrieval," IEEE, 1994, National University of Singapore.	
		BILGE BUNSEL, YUE FU and A. MURAT TEKALP, "Hierarchical Temporal Video Segmentation and Content Characterization," SPIE Vol. 3229, 1997, Dept. of Electrical Engineering and Center for Electronic Imaging Systems, University of Rochester, Rochester, NY 14627, pp. 46-56.	
		MARK T. MAYBURY and ANDREW E. MERLINO, "Multimedia Summaries of Broadcast News," IEEE 1997, Advanced Information systems Center, The MITRE Corporation, 202 Burlington Road, Bedford, MA 01730, USA, pp. 442-449.	
		BOON-LOCK YEO and MINERVA M. YEUNG, "Retrieving and Visualizing Video," communications of the ACM, December 1997/Vol. 40, No.12, pp. 43-52.	
		RICHARD J. QUIAN, M. IBRAHIM SEZAN, and KRISTINE E. MATTHEWS, "A Robust Real-time Face Tracking Algorithm," 1998 IEEE, Sharp Laboratories of America, 5750 NW Pacific Rim Blvd., Camas, WA 98607, pp. 131-135.	
		DANIEL DEMENTHON, BIKRANT KOBLA and DAVID DOERMANN, "Video Summarization by Curve Simplification," ACM Multimedia 1998, Language and Media Processing (LAMP), University of Maryland, College Park, MD 20742-3275, pp. 211-218.	
		Y. KAWAI, et al., "Detection of Replay Scenes in Broadcasted sports Video by Focusing on Digital Video Effects," IEICE (D-II), vol. J84-D-II, No. 2, pp. 432-435, February 2001 (in Japanese).	
		RICHARD O. DUDA and PETER E. HART, "Use of the Hough Transformation To Detect Lines and Curves in Pictures," Stanford Research Insitute, Menlo Park, California, 1972, Association for computing Machinery, Inc., pp. 11-15.	
		BAOXIN LI and M IBRAHIM SEZAN, 'Event Detection and summarization in sports video," Sharp Laboratories of America 2750 NW Pacific Rim blvd., Camas, Washington 98607, at least one year prior to filing.	

www.pvi.com, at least one year prior to filing.

T LAMBROU, P. KUDUMAKIS, R. SPELLER, M. SANDLER and A. LINNEY, "Classification of Audio Signals Using Statistical Features on time and Wavelet Transform Domains," 1998 IEEE, pp. 3621-3624.

MICHAEL T. CHAN, YOU ZHANG and THOMAS S. HUANG, "Real-Time Lip Tracking and Bimodal continuous speech Recognition," at least one year prior to filing.

DULCE PONCELEON, SAVITHA SRINIVASAN, ARNON AMIR, DRAGUTIN PETKOVIC and DAN DIKLIC, "Key to Effective Video Retrieval: Effective Cataloging and Browsing," ACM Multimedia 1998, pp. 99-107.

YIHONG GONG, LIM TECK SIN, CHUA HOCK CHUAN, HONGJIANG ZHANG, and MASAO SAKAUCHI, "Automatic Parsing of TV Soccer Programs," 1995 IEEE, pp. 167-174.

RICHARD QIAN, NIELS HAERING, and IBRAHIM SEZAN, "A computational approach to Semantic Event Detection," 1999 IEEE, pp. 200-206.

F. ARMAN, R. DEPOMMIER, A HSU, and M-Y CHIU, "Content-based Browsing of Video Sequences," Proceedings of ACM International Conference on Multimedia '94, October 15-20, San Francisco, CA, USA.

HONGJIANG ZHANG, STEPHEN E. SMOLIAR and JIAN HUA WU, "Content-Based Video Browsing Tools," SPIE Vol. 2417, pp. 389-398.

B.B. CHAUDHURI, N. SARKAR, and P. KUNDU, "Improved fractal geometry based texture segmentation technique," IEE Proceedings-E, Vol. 140, No. 5, September 1993, pp. 233-241.

GIRIDHARAN IYENGAR AND ANDREW LIPPMAN, "Models for automatic classification of video sequences," SPIE Vol. 3312, 1997, pp. 216-227.

NEVENKA DIMITROVA and FOROUZAN GOLSHANI, "Motion Recovery for Video Content Classification," ACM Transactions on Information Systems, Vol. 13, No. 4, October 1995, pp. 408-439.

SHIN'ICHI SATOH and TAKEO KANADE, "Name-It: Association of Face and Name in Video," School of computer Science, Carnegie Mellon University, Pittsburgh, PA 15213, December 20, 1996.

R. W. PICARD, "A Society of Models for Video and Image Libraries, " IBM Systems Journal, Vol. 35, Nos 3&S, 1996, pp. 292-312.

ALBERTO DEL BIMBO, ENRICO VICARIO and DANIELLE ZINGONI, "A Spatial Logic for Symbolic Description of Image Contents," Journal of visual Languages and computing (1994) 5, 267-286.

SELIM AKSOY and ROBERT M. HARALICK, "Textural Features for Image Database Retrieval," Intelligent Systems Laboratory, Department of electrical Engineering, University of Washington, Seattle, WA.

B.S. MANJUNATH and W.Y. MA, "Texture Features for Browsing and Retrieval of Image Data," IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 18, No.8, August 1996, pp. 837-842.

NOBORU BABAGUCHI, "Towards Abstracting sports video by Highlights," ISIR, Osaka University, Ibaraki, Osaka 567-0047, Japan, IEEE 2000, pp. 1519-1522.

RAINER LIENHART, SILVIA PFEIFFER, and WOLFGANG EFFELSBERG, "Video Abstracting," Communications of the ACM, December 1997, Vol. 40, No. 12, pp. 55-62.

MINERVA M. YEUNG and BOON-LOCK YEO, "Video Visualization for Compact Presentation and Fast Browsing of Pictorial Content," IEEE Transactions on Circuits and Systems for Video Technology, Vol. 7, No. 5, October 1997, pp. 771-785.

STEPHEN S. INTILLE AND AARON F. BOBRICK, "Visual Tracking Using closed-Worlds," M.I.T. Media Laboratory Perceptual computing Section Technical Report No. 294, November 1994, pp. 1-18.

JOHN S. BORECZKY and LYNN D. WILCOX, "A Hidden Markov Model Framework for Video Segmentation Using Audio and Image Features," FX Palo alto Laboratory, Palo Alto, CA 94304 USA, at least one year prior to filing.

PENG XU, SHIH-FU CHANG, AJAY DIVAKARAN, ANTHONY VETRO and HURFANG SUN, "Algorithms and System for High-Level Structure-Analysis and Event Detection in soccer Video," Columbia University, ADVENT-Technical Report #111, June 2001.

HAO PAN, BAOXIN LI, and M IBRAHIM SEZAN, "Automatic Detection of Replay Segments in Broadcast sports Programs By Detection of Logos in Scene Transitions," Sharp Laboratories of America Inc., 5780 NW Pacific Rim Blvd., Camas, WA, USA, 2002 IEEE, pp. IV-3385-IV-3388.

NOBORU BABAGUCHI, YOSHIHIKO KAWAI, YUKINOBU YASUGI, and TADAHIRO KITAHASHI, "Linking Live and Replay Scenes in Broadcasted Sports Video," ACM Multimedia Workshop Marina Del Ray, CA, USA, Copyright ACM 2000.

LEXING XIE, "Segmentation and Event Detection in soccer Audio," EE 6820 Project Soccer Audio, May 15, 2001, pp. 1-9.

RICCARDO LEONARDI and PIERANGELO MIGLIORATE, "Semantic Indexing of Multimedia documents," April-June 2002, IEEE, pp. 44-51.

LEXING XIE, SHIH-FU CHANG, AJAY DIVAKARAN, and HUIFANG SUN, "Structure Analysis of Soccer Video with Hidden Markov Models," Department of Electrical Engineering, Columbia University, NY, NY and Mitsubishi Electric Research Lab, Murray Hill, NJ, at least one year prior to filing.

RICHARD W. CONNERS and CHARLES A. HARLOW, "A Theoretical Comparison of Texture Algorithms," IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. PAMI-2, No. 3, may 1980, pp. 204-222.

SUNGHOON CHOI, YONGDUEK SEO, HUNWOO KIM and KI-SANG HONG, "Where are the ball and players?: Soccer Game Analysis with color-based Tracking and Image Mosaick," Dept. of EE, Pohang University of Science and Technology, San 31 Hyoja dong, Pohang, 780-784, Republic of Korea, pp. 1-15.

CHUNG-LIN HUANG and CHIH-YU-CHANG, "Video Summarization using Hidden Markov Model," Electrical Engineering Department, National Tsing-Hua University, Hsin-Chu, Taiwan, ROC, 2001 IEEE, pp. 473-477.

CHRISTEL, MICHAEL G., HAUPTMANN, ALEXANDER G., WARMACK, ADRIENNE S., and CROSBY, SCOTT S., "Adjustable Filmstrips and Skims as Abstractions for a Digital Video Library," Computer Science Department, Carnegie Mellon University, Pittsburgh, PA; pp. 1-7.

VASCOCELOS, NUNO, AND LIPPMAN, ANDRES, "Bayesian Modeling of Video Editing and Structure: Semantic Features for Video Summarization and Browsing," 1998 IEEE Journal, pp. 8186-8821, January 1998.

MASUMITSE, KEN AND SCHIGO, TOMIO, "video Summarization Using Reinforcement Learning in eigenspace; IBM Research, Tokyo Research Laboratory 1623-14, Shimotsuruma, Yamatoshi, Kanagawa, Japan.

INSTILLE, STEPHEN S., "Tracking Using a Local closed-World Assumption: Tracking in the football domain," MIT Media Arts and Sciences Master Thesis, August 5, 1994, pps. 1-62.

KOBLA, DANIEL ET AL., "Identifying Sports Videos Using Replay, Text, and Camera Motion Features," Laboratory for Language and Media Processing at the University of Maryland, consisting of 12 pages.

LEVINSON, S.E., et al., "An Introduction to the application of the Theory of Probabilistic Functions of a markov Process to Automatic speech Recognition," The Bell System Technical Journal, vol. 62, No. 4, april 1993, pps. 1035-1074.

SAUR, DREW D., et al., "Automated analysis and Annotation of Basketball Video, SPIE, Vol 3022, pp. 176-187.

YOW, DENNIS ET AL., "Analysis and Presentation of Soccer Highlights from Digital Video," Second Asian Conference on Computer Vision 1995, consisting of five pages.

GOLIN, STUART J., "New Metric to Detect Wipes and Other Gradual Transitions in video," SPIE Vol. 3653, January 1999.

COURTNEY, JONATHAN, "Automatic video Indexing via Object Motion Analysis," Pattern Recognition, Vol. 30, No. 4, pps. 6007-625, 1997.

SMITH, MICHAEL A., ET AL., "Video Skimming for Quick Browsing Based on Audio and Image characterization," Carnegie Mellon School of computer Science, July 30, 1995, consisting of 21 pages.

KSCHISCHANG, FRANK R., et al., "Factor Graphs and The Sum-Product Algorithm, " IEEE Transactions On Information theory, Vol. 47, No. 2, February 2001, pps. 498-519.

EICKLER, STEFAN, et al., "Content-Based Video Indexing of TV Broadcast News Using Hidden Markov Models, IEEE International Conference on Acoustics, speech and Signal Processing, Phoenix, AZ, 1999, consisting of four pages.

SMYTH, PADHRAIC, "Belief Networks, Hidden Markov Models and Markovs Random fields: A Unifying view, Pattern Recognition Letters, Vol. 18, 1998, consisting of 11 pages.

WOLF, WAYNE, "Hidden Markov Model Parsing of Video Programs, IEEE International Conference on Acoustics, Speech and Signal Processing, 1997, pps. 2609-2611.

PAN, H., et al. "Detection of Slow-Motion Replay Segments in sports Video for Highlights Generation," IEEE International Conference on Acoustics, speech and Signal Processing, Salt Lake city, UT 2001, consisting of four pages.

RUI, YONG, et al. "Automatically Extracting Highlights for TV Baseball Programs," Microsoft Research, 2000 pps. 105-115.

RABINER, LAWRENCE R., "A Tutorial on Hidden Markov Models and selected Applications in speech Recognition," IEEE, Vol. 77, No. 2, February 1989, pps. 257-286.

BORECZKY, JOHN S., et al., "A Hidden Markov Model Framework for video Segmentation Using Audio and Image Features, IEEE International conference on Acoustics, speech and signal Processing, Seattle, WA 1998, consisting of four pages.

LU, H.B., et al. "Robust Gradual Scene Change Detection, IEEE International conference on Image Processing, Kobe, Japan, 1999, consisting of five pages.

LIU, ZHU, et al., "Detecting News Reporting Using Audio/visual Information, IEEE International conference on Image Processing, Kobe, Japan, 1999, consisting of five pages.

ULLAS, GARGI, ET AL., "Transaction Letters: Performance Characterization of Video-Shot-Changes Detection Methods," IEEE Transactions on Circuits and Systems for Video technology, vol. 10, No. 1, February 2000, pps. 1-13.

LIENHART, RAINER, "Comparison of Automatic Shot Boundary Detection algorithms," SPIE Vol. 3656, January 1999, pps. 290-301.

NAPHADET, M.R., ET AL., "A High Performance Shot Boundary Detection Algorithm Using Multiple Cues," IEEE International conference on Image Processing, Chicago, IL 1998, pps. 884-887.

		KAWASHIMA, TOCHIO, et al., "Indexing of Baseball Telecast for content-based Video Retrieval, IEEE 1998, pps. 871-874.	
		WANG, TAO, et al., "Multimedia content-analysis, IEEE Signal Processing Magazine, November 2000, pps. 12-35.	
		YEO, BOON-LOCK, et al., "On the Extraction of DC Sequence From MPEG compressed video, IEEE 1995, pps. 260-263.	
		CANNY, JOHN, "A Computational approach to Edge Detection, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. PAMI-8, No. 6, November 1986, pps. 679-698.	
		KOBLA, VIKRANT et al., "Detection of Slow-Motion Replay Sequences for Identifying Sports Videos," University of Maryland, consisting of six pages.	
		YEUNG, MINERVA, et al. "Extracting Story Units from Long Programs for Video Browsing and Navigation," IEEE Proceedings of Multimedia, 1996, pp. 296-305.	

| Examiner Signature | /Aaron Sanders/ | Date Considered | 04/30/2008 |

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /AJS/